

REMARKS

Claims 1-25 and 27-44 remain in the present application. Claims 28-31 are amended herein. Applicants respectfully assert that no new matter has been added as a result of the claim amendments. Applicants respectfully request further examination and reconsideration of the rejections based on the arguments set forth below.

Allowable Subject Matter

Applicants would like to thank the Examiner for the indication that Claims 37, 43 and 44 would be allowable if rewritten in independent form.

Claim Rejections – 35 U.S.C. §102(b)

Claims 28-31 are rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent Number 6,188,394 to Morein et al. (hereafter referred to as “Morein”). Applicants have reviewed the cited reference and respectfully assert that the embodiments of the present invention as recited in Claims 28-31 are neither anticipated nor rendered obvious by Morein for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 28 that recites a method for reading a frame buffer comprising (emphasis added):

receiving an address corresponding to a pixel;
transforming the received address into multiple subpixel addresses;
reading at least two subpixels from the frame buffer using at least
two of the multiple subpixel addresses, wherein the frame buffer
comprises a plurality of pixels, wherein each pixel comprises a plurality of
subpixels; and
blending the at least two subpixels to create a pixel value for said
pixel.

Independent Claim 30 recites limitations similar to those of independent Claim 28. Claims 29 and 31 depends from their respective independent Claims and recite further limitations to the claimed invention.

Applicants respectfully assert that Morein fails to teach or suggest the limitations of “transforming the received address into multiple subpixel addresses” as recited in independent Claim 28. As described and claimed in the present application, an address corresponding to a pixel is received. Thereafter, the address is transformed into multiple subpixel addresses.

In contrast to the claimed embodiments, Applicants understand Morein to teach that a *single* address is identified by a pointer stored at a location corresponding to a pixel (col. 2, lines 21-23). Specifically, Morein teaches that “[t]he pointer points to a *selected address*.” As such, assuming arguendo that Morein teaches receiving an address corresponding to a pixel as claimed, Morein teaches away from the claimed embodiments by teaching that a *single* address is identified instead of transforming the received address into *multiple* subpixel addresses as claimed.

Applicants respectfully assert that Morein fails to teach or suggest the limitations of “reading at least two subpixels from the frame buffer using at least two of the multiple subpixel addresses” as recited in independent Claim 28. As described and claimed in the present application, at least two subpixels are *read* from a framebuffer. The at least two subpixels are read using at least two of the multiple subpixel addresses transformed from the address corresponding to a pixel.

In contrast to the claimed embodiments, Applicants fail to find any teaching in Morein that at least two subpixels are read from the framebuffer, and further, that they are read using at least two of the multiple subpixel addresses. In general, Applicants respectfully assert that Morein is directed to *storing* of either a compressed sample set or a pointer in a frame buffer (Abstract), not to the reading of subpixel addresses. Further, the cited portion of Morein teaches that data *can be* retrieved based upon a determination of whether a compressed sample set or a pointer is stored in a memory (col. 4, lines 9-13), but fails to teach that the data *is* read. Moreover, given that Morein fails to teach or suggest transforming a received address into multiple subpixel addresses as discussed above, Morein also fails to teach or suggest that at least two subpixels are read using such multiple subpixel addresses.

For these reasons, Applicants respectfully assert that independent Claim 28 is neither anticipated nor rendered obvious by Morein, thereby overcoming the 35 U.S.C. §102(b) rejections of record. Since independent Claim 30 recites limitations similar to those discussed above with respect to independent Claim 28, independent Claim 30 also overcome the 35 U.S.C. §102(b) rejections of record. Since dependent Claims 29 and 31 recite further limitations to the invention claimed in their respective independent Claims, dependent Claims 29 and 31 are also neither anticipated nor rendered obvious by Morein. Therefore, Claims 28-31 are allowable.

Claim Rejections – 35 U.S.C. §103

Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35

Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of United States Patent Number 5,854,637 to Sturges (hereafter referred to as “Sturges”). Applicants have reviewed the cited references and respectfully assert that the embodiments of the present invention as recited in Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are not rendered obvious by Morein in view of Sturges for the following reasons.

Applicants respectfully directs the Examiner to independent Claim 1 that recites a method for providing antialiased memory access comprising (emphasis added):

receiving a request to access a memory address; and
determining if the memory address is within a virtual frame buffer
and, if so, performing the following:
transforming the memory address into at least one physical
address within a frame buffer utilized for antialiasing, wherein said
frame buffer is a single memory for containing data of a plurality of
subpixels corresponding to a pixel of said virtual frame buffer; and
accessing data of a subpixel at the at least one physical
address within the frame buffer.

Independent Claims 9, 15, 21 and 32 recite limitations similar to independent Claim 1. Claims 2-4 depend from independent Claim 1 and recite further limitations to the claimed invention. Claims 10 and 13 depend from independent Claim 9 and recite further limitations to the claimed invention. Claims 16-17 and 19 depend from independent Claim 15 and recite further limitations to the claimed invention. Claims 22 and 23 depend from independent Claim 21 and recite further limitations to the claimed invention. Claims 33-35 depend from independent Claim 32 and recite further limitations to the claimed invention.

The rejection states that Morein fails to teach or suggest the limitations of “determining if the memory address is within a virtual frame buffer” as recited in independent Claim 1. Applicants concur.

Applicants respectfully assert that Sturges, either alone or in combination with Morein, also fails to teach or suggest the limitations of “determining if the memory address is within a virtual frame buffer” as recited in independent Claim 1. As described and claimed in the present application, a determination is made as to whether a memory access is within a virtual frame buffer.

In contrast to the claimed embodiments, Applicants understand Sturges to teach a virtual frame buffer *device* (VFBD), which is a *device* running on a CPU instead of a virtual frame buffer comprising memory addresses as claimed. For example, a device running on a CPU does not comprise memory addresses as does a virtual frame buffer as claimed, but instead performs operations (e.g., routing operations) to carry out accesses to memory identified by memory addresses (col. 7, lines 2-8). Additionally, Sturges teaches that an application program accesses the frame buffer by the BIOS transmitting a value indicating the top of the frame buffer memory to the VFBD (col. 7, lines 40-42). As such, Sturges teaches away from the claimed embodiments by teaching that a memory address associated with a request is in *a frame buffer* instead of a *virtual frame buffer* as claimed.

Additionally, Applicants respectfully assert that Sturges fails to teach or suggest the limitations of “wherein the virtual frame buffer comprises a predefined memory range of a graphics memory” as recited in Claim 3, 13, 19 and 23. As recited and described in the present application, a virtual frame

buffer (e.g., 304 of Figure 6) comprises a predefined memory range (e.g., from beginning address 610 to ending address 612) of a graphics memory (e.g., 600 of Figure 6).

In contrast to the claimed embodiments, Applicants understand Sturges to teach a shared memory comprising a predefined memory range which forms a frame buffer (Figures 1 and 3; col. 6, lines 41-42). For example, Figure 3 shows a one megabyte frame buffer 20 which spans from the top of memory to the limit of the physical memory. As such, Sturges teaches away from the claimed embodiments by teaching a memory range forming a frame buffer instead of a virtual frame buffer as claimed. Additionally, Sturges further teaches away from the claimed embodiments by teaching that the memory range is that of a shared memory instead of a graphics memory as claimed.

For these reasons, Applicants respectfully assert that independent Claim 1 is not rendered obvious by Morein in view of Sturges, thereby overcoming the 35 U.S.C. §103(a) rejections of record. Since independent Claims 9, 15, 21 and 32 contain limitations similar to those discussed above with respect to independent Claim 1, independent Claims 9, 15, 21 and 32 also overcome the 35 U.S.C. §103(a) rejections of record. Since dependent Claims 2-4, 10, 13, 16-17, 19, 22-23 and 33-35 recite further limitations to the invention claimed in their respective independent Claims, dependent Claims 2-4, 10, 13, 16-17, 19, 22-23 and 33-35 are also not rendered obvious by Morein in view of Sturges. Therefore, Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are allowable.

Claims 5-6, 11-12, 18 and 25

Claims 5-6, 11-12, 18 and 25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Sturges, and further in view of United States Patent Number 5,664,162 to Dye (hereafter referred to as “Dye”). Applicants have reviewed the cited references and respectfully assert that the embodiments of the present invention as recited in Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Morein in view of Sturges and further in view of Dye for the following reasons.

Applicants respectfully assert that Dye, either alone or in combination with Morein and/or Sturges, fails to cure the deficiencies of the Morein/Sturges combination discussed above with respect to independent Claims 1, 9, 15 and 21. Specifically, Applicants respectfully assert that Dye also fails to teach or suggest “determining if the memory address is within a virtual frame buffer” as recited in independent Claims 1, 9, 15 and 21. Consequently, since Claims 5-6, 11-12, 18 and 25 recite further limitations to the invention claimed in their respective independent Claims, Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Morein in view of Sturges and further in view of Dye. Thus, Claims 5-6, 11-12, 18 and 25 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claims 7-8, 14, 20, 27 and 38-42

Claims 7-8, 14, 20, 27 and 38-42 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Sturges, and further in view of United States Patent Number 5,594,854 to Baldwin et al. (hereafter referred to as “Baldwin”). Applicants have reviewed the cited references and respectfully

assert that the embodiments of the present invention as recited in Claims 7-8, 14, 20, 27 and 38-42 are not rendered obvious by Morein in view of Sturges and further in view of Baldwin for the following reasons.

Applicants respectfully assert that Baldwin, either alone or in combination with Morein and/or Sturges, fails to cure the deficiencies of the Morein/Sturges combination discussed above with respect to independent Claims 1, 9, 15, 21 and 32. Specifically, Applicants respectfully assert that Baldwin also fails to teach or suggest “determining if the memory address is within a virtual frame buffer” as recited in independent Claims 1, 9, 15, 21 and 32. Consequently, since Claims 7-8, 14, 20, 27 and 38-42 recite further limitations to the invention claimed in their respective independent Claims, Claims 7-8, 14, 20, 27 and 38-42 are not rendered obvious by Morein in view of Sturges and further in view of Baldwin. Thus, Claims 7-8, 14, 20, 27 and 38-42 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claims 24 and 36

Claims 24 and 36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Sturges, and further in view of United States Patent Number 5,623,692 to Priem et al. (hereafter referred to as “Priem”). Applicants have reviewed the cited references and respectfully assert that the embodiments of the present invention as recited in Claims 24 and 36 are not rendered obvious by Morein in view of Sturges and further in view of Priem for the following reasons.

Applicants respectfully assert that Priem, either alone or in combination with Morein and/or Sturges, fails to cure the deficiencies of the Morein/Sturges combination discussed above with respect to independent Claims 21 and 32. Specifically, Applicants respectfully assert that Priem also fails to teach or suggest "determining if the memory address is within a virtual frame buffer" as recited in independent Claims 21 and 32. Consequently, since Claims 24 and 36 recite further limitations to the invention claimed in their respective independent Claims, Claims 24 and 36 are not rendered obvious by Morein in view of Sturges and further in view of Priem. Thus, Claims 24 and 36 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

CONCLUSION

Applicants respectfully assert that Claims 1-25 and 27-44 are in condition for allowance and Applicants earnestly solicit such action from the Examiner.

The Examiner is urged to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,

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